2002 IEEE CEIDP

Final Program: IEEE Conference on Electrical Insulation and Dielectric Phenomena
Hyatt Regency Cancun, Quinta Roo, Mexico, October 20–24, 2002

Living Past Chairs

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Isidor Sauers, Oak Ridge National Laboratory, USA
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Gian Carlo Montanari, University of Bologna, Italy
Yoshimichi Ohki, Waseda University, Japan
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Arend van Roggen, USA

Publications and Publicity

Isidor Sauers (Chair) Oak Ridge National Laboratory USA
Ken Stricklett National Institute of Standards and Technology USA

Local Arrangements

Alberto Calva (Chair) Instituto Politecnico Nacional Mexico
Jennifer Lampert, IEEE Conference Services, USA

Session Organizers

W. Mike Arnold, Industrial Research Ltd., New Zealand
Steven A. Boggs, University of Connecticut, USA
R. Anthony Fouracre, University of Strathclyde, UK
Reimund Gerhard-Multhaupt, University of Potsdam, Germany
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Raji Sundararajan, Arizona State University East, USA

Session Chairs

Kazutoshi Asano, Yamagata University, Japan
John Densely, ArborLec Solutions, Canada
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Klaus Froehlich, Swiss Federal Institute of Technology, Switzerland
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Yashimichi Ohki, Waseda University, Japan
Harry Orton, Orton Consulting Engineers Intl., Canada
Marshall Pace, University of Tennessee, USA
Rainer Patsch, University of Siegen, Germany

Conference Information

The 2002 Conference on Electrical Insulation and Dielectric Phenomena (CEIDP) is sponsored by the Dielectrics and Electrical Insulation Society (DEIS) of the Institute of Electrical and Electronics Engineers (IEEE) to provide a forum for discussion of current research on electrical insulation, dielectric phenomena, and related topics. The Conference provides an opportunity for specialists from around the world to meet and to discuss ongoing research. Topics of interest to the Conference include: high-field effects; aging; treeing; partial discharge measurements; electrohydrodynamics; charge storage and transport; flow electrification; polarization phenomena; surface flashover; measurement techniques; outdoor insulation; and prebreakdown and breakdown in solids, liquids, gases, and vacuum.

The Whitehead Lecture

The 2002 Whitehead Memorial Lecture will be presented by Professor Len A. Dissado of the University of Leicester, Leicester, UK. His talk is entitled, *Predicting electrical breakdown in polymeric insulators: from deterministic mechanisms to failure statistics*.

Registration

Registration payment before September 15, 2002	$320
Registration payment after September 15, 2002	$350
IEEE life member, student, retired, and unemployed	$100

Registration includes one copy of the 2002 Annual Report and the following social functions:
Reception, Sunday, October 20, 1800–2100
Social hour and banquet, October 22, Tuesday 1830–2100
Refreshments served during breaks

Tickets for the banquet are available for spouses and guests.

All fees are due at the Conference. Payment may be by check, money order, or credit card. The following credit cards are accepted: American Express, Diners Club, Mastercard, and Visa. Checks and money orders should be made payable to the CEIDP. Checks and money orders drawn on or payable through US banks are accepted. All Conference fees are in US dollars.

Conference registration may be submitted on the Conference web page at https://swww3.ieee.org/EventReg/?societyBrand=CEIDP02 or by using the registration form located at the end of this program.

The registration desk will be open during the following hours:
Sunday, October 20, 1600–2100
Monday, October 21, 0800–1600 and 1900–2000
Tuesday, October 22, 0800–1200
Wednesday, October 23, 0800–1200
Thursday, October 24, 0800–1200.

Please pre-register even if you are unable to make advance payment.

Hotel

All sessions and activities of the 2002 CEIDP will be held at the Hyatt Regency Cancun. Information on the hotel can be obtained on the internet at http://cancun.hyatt.com.

Reservations should be made directly with the hotel at the following address:

Hyatt Regency Cancun
Blvd Kukulcan Km 8.5
PO Box 1201
Hotel Zone
Cancun, Q Roo 77500 Mexico
Tel: +52 998 883 1234 / 883 0966
Fax: +52 998 883 1349 / 883 1438
E-mail: hyattreg@hyattregencycancun.com.mx

The following special room rates are offered to Conference attendees:

Deluxe room single occupancy US $110 per night
Deluxe room double occupancy US $115 per night
Deluxe room triple occupancy US $150 per night

These rates include a complimentary American breakfast and a 15% service charge. Room rates are subject to a 12% federal tax.

If you are planning an extended stay, these special room rates are available to Conference attendees between the dates of October 14 and October 29.

For those traveling with family members, up to two children, 10 years of age and under, may share a room with their parents at no extra charge. The children's breakfast is offered to guests of the hotel at a 50% discount.

To ensure these rates, your hotel reservation and deposit must be received by September 12, 2002. Reservations made after September 12, 2002 will be accepted on a space and rate availability basis.

Be sure to mention that you are attending the 2002 CEIDP when making your reservation to receive the Conference room rates.

Arend van Roggen Recognition Dinner

The DEIS is pleased to sponsor a dinner for Dr. Arend van Roggen in recognition of his service to the society as Editor in Chief of the IEEE Transaction on Dielectrics and Electrical Insulation. The dinner will be held on Monday, October 21, 1900–2100. Tickets may be purchased at pre-registration at of cost of $35. Please pre-register and prepay by September 15, 2002 to ensure your reservation. Dinner reservations made after September 15 will be on a space availability basis.

Tours

The following tours are planned during the Conference. Please pre-register and prepay by September 15, 2002 to ensure your tour reservation. Tour reservations made after that date are on a space-available basis. The tours may be subject to cancellation if there is insufficient interest. Tour fees will be refunded if a tour is cancelled.

Xcaret: A tour of Xcaret is offered for Conference attendees and their guests on Wednesday, October 23.

Xcaret was one of the most important Mayan ceremonial centers and ports for more than 10 centuries. Today it has become a magnificent eco-archaeological park to enjoy a great variety of activities and attractions. Park facilities include: restaurants and bars; an information center; snorkel, locker and stroller rentals; gift shop; photo shop; bathrooms and showers; beach lounges; hammocks; medical services; and ATM service. The historical and cultural attractions include: an archaeological site, Museum Botanical garden, orchid farm, wild bird aviary, reef aquarium, caverns, butterfly pavilion, bat cave, musical events, Mayan village, folkloric Mexican shows. Park activities include: horse back riding, diving, scuba and snorkeling tours, sea trek, underground river, Mayan river, inlet, lagoon, and an interactive swim with dolphins.

The tour bus will depart the hotel at 1300 and return at around 2130. The cost of the tour is $75 for adults and $44 for children.

Further information on Xcaret is available over the internet at http://www.xcaretcancun.com/

Comision Federal de Electricidad Substation: A technical tour of the Comision Federal de Electricidad substation "Playa del Carmen" 230/115 kV, 34.5/13.8 kV will be provided on Wednesday, October 23 from 1300 to 1730. The substation is the terminus for submarine cables from the mainland, and is the main substation supplying electrical energy to the Isla de Cozumel and the Riviera Maya Tourist Complex. The cost of the tour is $20.

Travel

Cancun is served by Cancun International Airport, which is located 24 kilometers from the Hyatt Regency Cancun. Directions to the Conference hotel are available at http://cancun.hyatt.com/cancu/loca/transfer.html.

Shuttle Service: The Chac-Mol shuttle service provides transportation to and from the airport 24 hours a day. You can recognize these shuttles by their distinctive yellow doors. The cost of transportation to the hotel is approximately US $9 per person. Tickets must be purchased at the Chac-Mol office, which is located in the airport terminal near the main exit.

Taxis: Taxis are available at the airport and at the hotel lobby. Fares are moderate, but in order to avoid misunderstandings, it is best to settle on the price with the driver before departing. The cost of taxi service from the hotel to the airport is approximately $15. Taxi service from the hotel to downtown Cancun is approximately $8. Taxi fares may vary.

Car Rentals: Major car rental companies operate from the airport. To rent a car, you must be at least 25 years of age, hold a valid driver's license, and have a major credit card.

Public Transportation: There are local urban buses that service Route 1, which is the Hotel Zone. They stop by all the hotels throughout the day and approximately every ten minutes at night. Transportation to and from downtown Cancun will cost approximately $1.

Spouse and Guest Program

Information on local attractions will be available from the hotel.

Spouses and guests are welcome to attend the Sunday evening reception and to attend the social hour and banquet on Tuesday evening, October 22. Additional banquet tickets are available at $35 each.

IEEE/DEIS Technical Meetings

DEIS committee chairs planning to hold meetings during the Conference should contact Ken Stricklett prior to the Conference. Limited meeting space is available and requests for space will be honored in the order that they are received.

Author Support

The CEIDP is able to provide limited support to authors. Inquiries should be sent to:

Ken Stricklett, CEIDP Program Committee Chair
National Institute of Standards and Technology
100 Bureau Drive, MS 8113
Gaithersburg, MD 20899-8113
USA
Tel: 301-975-3955
Fax: 301-948-5796
E-Mail: stricklett@nist.gov

Student Support

To encourage student participation, a limited number of $300 stipends are awarded to full-time students. For further information contact:

Vijendra Agarwal, Conference Chair
The College of Staten Island of CUNY
2800 Victory Boulevard, 1A-305
Staten Island, New York 10314
USA
Tel: 718-982-2464
FAX: 718-982-2442
E-Mail: agarwal@postbox.csi.cuny.edu

2002 Annual Report

One copy of the 2002 Annual Report is provided with registration. While supplies last, additional copies may be obtained at the Conference at a cost of $80 each. Following the Conference, the Annual Report is available from:

IEEE Service Center
Single Publication Sales Department
445 Hoes Lane
Piscataway, NJ 08854
USA
Tel: 800-678-4333
Fax: 732-981-9667

Biodielectrics Workshop

A workshop organized by the DEIS Technical Committee on Biodielectrics, and sponsored by the DEIS and the U.S. Air Force Office of Scientific Research, is planned for Sunday, October 20, 2002. This one-day workshop will feature a series of invited talks on membrane structures, membrane functions, dielectric properties, and electrical breakdown or electroporation, respectively. In addition, an overview of applications of both reversible and irreversible electroporation in medicine and biology will be presented. The workshop agenda is provided below.

A special issue of the IEEE Transactions on Dielectrics and Electric Insulation on the topic of the workshop is planned for 2003. J. C. Weaver and K. H. Schoenbach will be guest editors for the issue. The special issue will contain invited papers and contributed papers. The deadline for submission of papers is January 15, 2003.

You may register for the workshop during pre-registration for the conference. The registration fee for the workshop is $50. For further information on workshop and special issue please contact:

Karl H. Schoenbach
Old Dominion University
Department of Electrical and Computer Engineering
Norfolk, VA 23529
USA
Tel: 757-683-4625
FAX: 757-683-3220
E-Mail: schoenbach@ece.odu.edu

Workshop on Dielectric Properties and Electrical Breakdown of Biological Membranes

0730 **Registration**

0815–0820 **Introduction,** Karl H. Schoenbach, Old Dominion University, USA

0820–0900 **Electroporation of biological membranes from multicellular to nano scales**
James C. Weaver. Harvard-MIT, USA

0900–0930 **Electrical and dielectric properties of experimental lipid bilayers in relation to biotechnology**
H.T. Tien, Michigan State University, USA

0930–1000 **Dielectric properties of biological systems; from amino acids to cells**
Yuri Feldman, Hebrew University, Israel

1000–1030 **Break**

1030–1100 **Trauma and injury resulting from strong electric field exposure**
Raphael C. Lee, University of Chicago, USA

1100–1130 **Dynamical modeling of cellular response to short high-intensity electric fields**
Ravindra P. Joshi, Old Dominion University, USA

1130–1200 **Intracellular electromanipulation of mammalian cells with submicrosecond pulsed electric fields**
E. Stephen Buescher, Eastern Virginia Medical School, USA

1200–1300 **Lunch Break**

1300–1330 **Medical applications of electropermeabilization of cell membranes**
Dietmar P. Rabussay, Genetronics, Inc., USA

1330–1400 **Damage of bacterial cell membranes by pulsed electric field treatment**
Ahmed E. Yousef, Ohio State University, USA

1400–1415 **Break**

1415–1445 **Industrial applications of electroporation**
Christoph Schultheiss, Forschungszentrum Karlsruhe GmbH, Germany

1445–1515 **Environmental applications of biological inactivation by pulsed electric field and/or pulsed discharges in water**
Hidenori Akiyama, Kumamoto University, Japan

1515–1545 **Break**

1545–1700 **Panel Discussion**

1700 **Adjourn**

2002 IEEE CONFERENCE ON ELECTRICAL INSULATION AND DIELECTRIC PHENOMENA

————————Sunday, October 20, 2002————————

0800–1700 **Biodielectrics Workshop**

1600–2100 **Registration**

1800–2100 **Reception (cash bar)**

————————Monday, October 21, 2002————————

0800–0815 **Welcome**
Vijendra Agarwal, Conference Chair
The College of Staten Island of CUNY, USA

0815–0915 **Whitehead Memorial Lecture**

Predicting electrical breakdown in polymeric insulators: from deterministic mechanisms to failure statistics
L.A. Dissado
University of Leicester, UK

0915–1000 **Break (Refreshments)**

1000–1200 **Session 1, General I (Oral)**

Chair: John C. Fothergill, University of Leicester, UK
Organizer: Teruyoshi Mizutani, Nagoya University, Japan

1-1 **Partial discharge and light emission in an artificially-simulated narrow tree channel**
H. Kawabata, C.-S. Kim and T. Mizutani
Nagoya University, Japan

1-2 **Electrical aging and breakdown of crosslinked polyethylene cables**
J.P. Crine
Consultant, Canada

1-3 **Aging of lapped tape insulated cable at cryogenic temperature**
M.O. Pace, I. Sauers, D.R. James, and A.R. Ellis
Oak Ridge National Laboratory, USA

1-4 **Electric-field-induced accumulation and alignment of carbon nanotubes**
X. Liu[1], J.L. Spencer[1], A.B. Kaiser[1], and W.M. Arnold[2]
[1]Victoria University of Wellington, New Zealand
[2]Industrial Research Ltd., New Zealand

1-5 Mobility estimation in polymeric insulation through space charge profiles derived by PEA measurements
J.M. Alison[1] G. Mazzanti[2], G.C. Montanari[2], and F. Palmieri[3]
[1]Alison Microwave Ltd., UK
[2]University of Bologna, Italy
[3]TechImp s.r.l., Italy

1-6 Electronic traps in polymer insulators: I(V) characteristics
G. Marcelli[1], M. Meunier[2], and N. Quirke[1]
[1]Imperial College of Science, Technology and Medicine, UK
[2]Accelrys, UK

1200–1230 Highlights from the biodielectrcs workshop
Karl H. Schoenbach, Old Dominion University, USA

1230-1400 Lunch Break

1400-1630 Session 2 (Poster)

1500-1630 Refreshments

1400–1630 2A Materials/Biodielectrics

Chair: Karl H. Schoenbach, Old Dominion University, USA
Organizer: W. Mike Arnold, Industrial Research Ltd., New Zealand

2A-1 About the water adsorption characteristics of artificially degraded insulation material surfaces
K. Ermeler and W. Pfeiffer
Darmstadt University of Technology, Germany

2A-2 Investigations on DC conductivity and space charge in silicone gel
F. Breit[1], D. Malec[2], and T. Lebey[2]
[1]Alstom Transport, France
[2]Université Paul Sabatier, France

2A-3 Non-linear characteristics of filled resins under alternating fields
B.R. Varlow and K. Li
University of Manchester, UK

2A-4 Space charge and electrical conductivity in LDPE doped with titanium dioxide
R.J. Fleming[1], C.N. Rasmussen[2], M. Henriksen[3], and J.T. Holboll[3]
[1]Monash University, Australia
[2]NKT Research, Denmark
[2]Technical University of Denmark, Denmark

2A-5 Electrical trees in solids and streamers in liquids structural analogies and differences
M. Sack, Y. Julliard, R. Badent, and A.J. Schwab
University of Karlsruhe, Germany

2A-6 The influence of CH_4 carrier gas in plasma polymerized styrene films
J.K. Park[1], J.T. Kim[2], and D.C. Lee[2]
[1]Yuhan College, Korea
[2]Inha University, Korea

2A-7 Qualification testing of engineering thermoplastics for electrical distribution applications
S.J. Ferrito
Cooper Power Systems, USA

2A-8 The effect of the process parameters on the electrical properties of Ni-Cr-Si alloy thin resistor films
B.-J. Lee[1], G.-B. Park[2], J.-I. Kim[3], and D.-C. Lee[1]
[1]Inha University, Korea
[2]Yuhan College, Korea
[3]Korea University of Technology and Education, Korea

2A-9 Dielectric properties of tissue-equivalent liquids and their effects on electromagnetic power absorption
K. Fukunaga, S. Watanabe, and Y. Yamanaka
Communications Research Laboratory, Japan

2A-10 Increased cell killing and DNA damage in cells exposed to ultra-short pulsed electric fields
M. Stacey[1], J. Stickley[1], P. Fox[1], C. O'Donnell[1], K. Schoenbach[2], S. Beebe[1], and B. Steven[1]
[1]Eastern Virginia Medical School, USA
[2]Old Dominion University, USA

2A-11 Electrical properties of rape-seed oil
M. Hemmer, R. Badent, and A.J. Schwab
University of Karlsruhe, Germany

2A-12 Electromechanical effects in biological membranes
T.J. Lewis
University of Wales, Bangor, UK

2A-13 A combined experimental and computational analysis of membrane potential variation in excitable cells in response to DC electric fields
N. Hassan, I. Chatterjee, N.G. Publicover, and G.L. Craviso
University of Nevada, USA

2A-14 Characterization of electric charge in non irradiated and irradiated MOS structures by thermal step and capacitance-voltage measurements
P. Notingher jr. [1], S. Agnel[1], A. Toureille[1], B. Rousset[2], and J.-L. Sanchez[2]
[1]Université Montpellier II, France
[2]Laboratoire d'Analyse et d'Architecture des Systemes, France

2A-15 Dimensioning of creepage distances under humidity conditions - water adsorption test
K. Ermeler and W. Pfeiffer

Darmstadt University of Technology, Germany

1400–1630 2B Modeling (Poster)

Chair: Glenn A. Gerdin, Old Dominion University, USA
Organizer: Vishnu K. Lakdawala, Old Dominion University, USA

2B-1 Comparative effects of surge voltage waveforms on the insulation of power transformers fed by voltage sourced converters
K. Raja[1], F. Devaux[1], S. Lelaidier[1], and B.B. Andersen[2]
[1]ALSTOM Transmission and Distribution, France
[2]ALSTOM Transmission and Distribution, UK

2B-2 Electric corona discharge simulation in the hyperbolic point - ground plane configuration
P. Atten[1], K. Adamiak[2], and V. Atrazhev[3]
[1]Lab. d'Electrostatique et de Materiaux Dielectriques, France
[2]University of Western Ontario, Canada
[3]Russian Academy of Sciences, Russia

2B-3 Response of an annular electrostatic probe for a right cylindrical spacer
T. Johansson and I.W. McAllister
Technical University of Denmark, Denmark

2B-4 Simulation of initial electric field distribution for prediction of lightning-caused breakdown paths to underground cables
Z. Song[1] and M.R. Raghuveer[1], and J. He[2]
[1]University of Manitoba, Canada
[2]Wuhan University, China

2B-5 Experimental and theoretical investigation of surface discharges for charged dielectric materials
L. Mueller and K. Feser
University of Stuttgart, Germany

2B-6 Cylindrical geometry electroquasistatic dielectrometry sensors
I.C. Shay[1], and M. Zahn[2]
[1]Jentek Sensors, Inc., USA
[2]Massachusetts Institute of Technology, USA

2B-7 Efficient solution of Transient nonlinear field problems
Z. Zheng[1] and S.A. Boggs[2]
[1]University of Toronto, Canada
[2]University of Connecticut, USA

2B-8 Analysis of the radiated electromagnetic field generated by a 132 kV, SF_6 circuit breaker
P.J. Moore and V.S.H. Chong
University of Bath, UK

2B-9 Design of stress-grading systems based on power loss minimization
H. El-Kishky[1], M. Abdel-Salam[2], H. Wedaa[2], and Y. Sayed[3]
[1]University of Texas at Tyler, USA
[2]Assiut University, Egypt
[3]El-Minia University, Egypt

2B-10 Dielectric properties of composite structures: simulations versus experiments
Yu.V. Serdyuk[1], A.D. Podoltsev[2], and S.M. Gubanski[1]
[1]Chalmers University of Technology, Sweden
[2]Institute of Electrodynamics, Ukraine

2B-11 Simulations of partial discharges of small microcracks parallel to the electrical field in polymeric materials
H.-P. Burgener, T.H. Teich, and K. Fröhlich
Swiss Federal Institute of Technology, Switzerland

2B-12 The study of thermal circuit model for the cable transformer coil based on finite element method
Q. Li[1], C. Fu[1], P. Yuan[1], Y. Li[1], and D. Xu[2]
[1]Xi'an Jiaotong University, China
[2]Guodian NanJing Automation Co. Ltd., China

2B-13 Chemical defects and electron trapping relevant to cable dielectrics
A. Campus[1], P. Carstensen[2], A.A. Farkas[3], and M. Meunier[4]
[1]Borealis AB, Sweden
[2]ABB, Corporate Research, Sweden
[3]ABB Power Technology Products, Sweden
[4]Accelrys, UK

2B-14 Onset voltage of negative corona in point-cup gaps
M.M. El Bahy
Zagazig University-Benha Branch, Egypt

2B-15 Distribution of the electric field in the discharge interval under AC voltage on contaminated electrolytic surfaces simulated HV polluted insulator
B. Zegnini and D. Mahi
Amar Telidji University of Laghouat, Algeria

2B-16 Range analyses in electroquasistatic field linear problems
M. Vitelli
Second University di Naples, Italy

2B-17 Numerical modeling of space charge and electroluminescence in polyethylene under DC field
S. Le Roy, G. Teyssedre, C. Laurent, and P. Segur
Université Paul Sabatier, France

2B-18 Computation of AC and DC electric field around a wet polluted insulator
G. Gerdin[1], V. Lakdawala[1], and P. Basappa[2]
[1]Old Dominion University, USA
[2]Norfolk State University, USA

1400–1630 2C EHD/Liquids

Chair: Kazutoshi Asano, Yamagata University, Japan
Organizer: Ken Stricklett, National Institute of Standards and Technology, USA

2C-1 Influence of pressboard ionizable groups on static electrification in power transformers
T. Paillat[1], N. Charvet[2], O. Moreau[3], G. Mortha[2], Y. Bertrand[3], and G. Touchard[1]
[1]Poitiers University, France
[2]EFPG Grenoble, France
[3]Electricité de France, France

2C-2 Acceleration and deceleration of a conductive particle within parallel electrodes in viscous fluid
K. Asano[1], C.-R. Choi[2], K. Yatsuzuka[1], and D.-C. Lee[3]
[1]Yamagata University, Japan
[2]Tokyo University of Science, Japan
[3]Inha University, Korea

2C-3 Trapped and transverse motion of a charged particle within tilted electrodes in silicone oil
C.R. Choi[1], K. Yatsuzuka[2], and K. Asano[2]
[1]Tokyo University of Science, Japan
[2]Yamagata University, Japan

2C-4 A computerized visualization of gas-phase EHD flow field for needle-plane electrodes system
T. Makita, R.-I. Ohyama, and M. Fukumoto
Tokai University, Japan

2C-5 Modification of the size and velocity of droplets for a diesel oil high-speed jet induced by an electric field
M. Sehili and H. Romat
Laboratoire d'Etudes Aérodynamiques, France

2C-6 Experimental analyses of gas liquid interfacial phenomena in an AW type EHD pump
R. Ohyama[1], A. Ueda[1], M. Kumeta[1], A. Watson[2], and J.S. Chang[3]
[1]Tokai University, Japan
[2]University of Windsor, Canada
[3]McMaster University, Canada

2C-7 Optimization of the electrohydrodynamic pump
I.V. Kojevnikov, O.V. Motorin, M.K. Bologa, and A.I. Kojevnikov
Institute of Applied Physics of Academy of Sciences of Moldova, Moldova

2C-8 Finite element-particle method calculation of EHD plumes
P. Vázquez, E. Chacón Vera, A. Castellanos, and T. Chacón Rebollo
University of Seville, Spain

2C-9 Modelling of finite amplitude electroconvection in cylindrical geometry: characterization of chaos
R. Chicon[1], A.T. Perez[2], A. Castellanos[2]
[1]University of Murcia, Spain
[2]University of Seville, Spain

2C-10 Perpendicular-field EHD instabilities visualized in a tip-plane configuration
F. Vega, A.T. Perez, F.J. Garcia, and A. Castellanos
University of Seville, Spain

2C-11 Electrohydrodynamically enhanced flow boiling in an eccentric horizontal cylindrical channel
J.S. Cotton[1], J.S. Chang[1], M. Shoukri[1], and T. Smith-Pollard[2]
[1]McMaster University, Canada
[2]Long Manufacturing Limited, Canada

2C-12 Electrical characteristics of pulsed arc electrohydraulic discharge electrostatic precipitator dust rapping/electrode cleaning system
J.S. Chang[1], K. Urashima[1], S. Kosaric[2], and R. Kanipayar[2]
[1]McMaster University, Canada
[2]Ko-Sen International Inc., Canada

2C-13 Three-dimensional electrohydrodynamics in the electrostatic precipitator
T. Yamamoto, M. Okuda, and M. Okubo
Osaka Prefecture University, Japan

2C-14 Standardized electrostatic charging tendency measurements in terms of temperature
P. Mas[1], S. Leon-Escalante[1], G. Touchard[1], and H. Muller[2]
[1]Lab Etudes Aérodynamiques, France
[2]Electricité de France, France

2C-15 Improvement of insulation in moist dielectric liquid by furfural
T. Kanzaki, K. Ota, M. Sone, and H. Mitsui
Musashi Institute of Technology, Japan

2C-16 Breakdown behavior of liquid-solid systems—a comprehensive model
Y. Julliard, R. Badent, and A.J. Schwab
University of Karlsruhe, Germany

2C-17 Comparison of different back-propagation algorithms in the diagnostic of transformer oil
L. Mokhnache[1] and A.P. Boubakeur[2]
[1]University of Batna, Algeria
[2]Ecole Nationale Polytechnique, Algeria

2C-18 Influence of additives and hydrostatic pressure on streamers initiation and dielectric strength of liquids
A. Beroual and T. Aka-N'Gnui
Ecole Centrale de Lyon, France

2C-19 Breakdown and flashover phenomena related to the presence of high absolute water contents in clean and carbonized transformer oil
M. Krins[1], M. Reuter[2], H. Borsi[2], and E. Gockenbach[2]
[1]Siemens AG, Germany
[2]University of Hanover, Germany

2C-20 Charge measurements and field calculations on subsonic streamers in cyclohexane
L. Costeanu[1], O. Lesaint[2], and P. Notingher jr.[1]
[1]Universitatea Politehnica Bucarest, Romania
[2]University of Joseph Fourier, France

2C-21 Temperature distribution in a continuous fluid flow heated by a pulsed electric field
H.F.M.van den Bosch, P.H.F. Morshuis, and J.J. Smit
Delft University of Technology, The Netherlands

2C-22 Electrohydrodynamic surface waves of thin oil films generated by needle-plate barrier discharges under argon gas environments
J.S. Chang and K. Urashima
McMaster University, Canada

2C-23 Inhibited rape-seed oil as substitute for mineral oils
R. Badent, M. Hemmer, and A.J. Schwab
University of Karlsruhe, Germany

2C-24 Three-phase traveling wave surface discharge along an insulating flat plate in air: application to electrohydrodynamical airflow control
E. Moreau, L. Leger, and G. Touchard
University of Poitiers, France

1900–2100 Arend van Roggen Recognition Dinner

Tuesday, October 22, 2002

0800–1000 Session 3, Das-Gupta Memorial (Oral)

Chair: John Densely, ArborLec Solutions, Canada
Organizer: Reimund Gerhard-Multhaupt, University of Potsdam, Germany

3-1 Measurements of space charge on HDPE specimens during long-time depolarization
D.K. Das Gupta[1] and G.C. Montanari[2]
[1]University of Wales, UK
[2]University of Bologna, Italy

3-2 The frequency effect of HV and electroluminescence in XLPE
L. Cisse, S.S. Bamji, and A.T. Bulinski
National Research Council Canada, Canada

3-3 Foamed and solid polymer electrets with high piezoelectric constants
J. Hillenbrand and G.M. Sessler
[1]Darmstadt University of Technology, Germany
[2]Tongji University, China

3-4 The origin of piezoelectricity in polymeric materials
T.J. Lewis
University of Wales, Bangor, UK

3-5 Towards an understanding of nanometric dielectrics
J.K. Nelson[1], J.C. Fothergill[2], L.A. Dissado[2], and W. Peasgood[2]
[1]Rennselaer Polytechnic Institute, USA
[2]University of Leicester, UK

3-6 Electrode poling of cellular polypropylene films with short high-voltage pulses
R. Gerhard-Multhaupt[1], M. Wegener[1], W. Wirges[1], J.A. Giacometti[2], R.A.C Altafim[2], L.F. Santos[2], R.M. Faria[2], and M. Paajanen[3]
[1]University of Potsdam, Germany
[2]Universidade de Sao Paulo, Brazil
[3]VTT Processes, Finland

1000-1030 Break (Refreshments)

1030-1230 Session 4 (Poster)

1030–1230 4A Outdoor Insulation (Poster)

Chair: Tetsuro Tokoro, Gifu National College of Technology, Japan
Organizer: Raji Sundararajan, Arizona State University East, USA

4A-1 Loss and recovery of hydrophobicity of novel hydrophobic epoxy resins
U. Kaltenborn[1], P. Meier[1], and Y. Dirix[2]
[1]ABB Switzerland Ltd, Corporate Research, Switzerland
[2]PI Precision Implants Ltd, Switzerland

4A-2 Application of risk criteria on transmission system insulation upgrade
J.M.B. Bezerra[2], A.M.N. Lima[2], and G.S. Deep[2]
[1]Federal University of Pernambuco, Brazil
[2]Federal University of Paraiba, Brazil

4A-3 Surface analysis of polymeric surge arresters under coastal Florida conditions
C. Rattanakhongviput, A. Mohammed, C. Ayerh, E. Soundararajan, and R. Sundararajan
Arizona State University East, USA

4A-4 Energy quantification of corona discharges on polymer insulators
B.N. Pinanngudi[1], R.S. Gorur[1], and A.J. Kroese[2]
[1]Arizona State University, USA
[2]Salt River Project, USA

4A-5 Computation of defect-induced electric fields on outdoor high voltage ceramic and non-ceramic insulators
R.S. Gorur and S. Sivasubramaniyam
Arizona State University, USA

4A-6 Prediction of degradation of polymer materials by Daubechies wavelet transformation
S. Venkataraman and R.S. Gorur
Arizona State University, USA

4A-7 Investigation on the hydrophobicity of composite insulators in contaminated areas
C. Zixia[1], L. Xidong[1], W. Yongyong[2], W. Xun[1], Z. Yuanxiang[1], and L. Zhi[1]
[1]Tsinghua University, China
[2]Jiamusi Electric Power Corporation, China

4A-8 Dynamic model of discharge propagation on discontinuous pollution layers under AC voltages and experimental validation
A. Beroual and N. Dhahbi-Megriche
Ecole Centrale de Lyon, France

4A-9 Mechanical and electrical characteristics of polymeric insulators manufacture from castor oil resins
R.A.C. Altafim[1], C.R. Murakami[2], G.O. Chierice[1], and J.A. Agnelli[3]
[1]University of São Paulo, Brazil
[2]University of São Carlos, Brazil
[3]Federal University of São Carlos, Brazil

4A-10 Proposal of separate technique using differential value of leakage current
N. Anami[1], S. Yamashita[1], Z. Yong[1], M. Otsubo[1], C. Honda[1], O. Takenouchi[2], and Y. Hashimoto[3]
[1]Miyazaki University, Japan
[2]Civil Aviation College, Japan
[3]Kyushu Electric Power Co. Inc., Japan

4A-11 The relation between behaviors of water droplet on the polymer surface and third harmonic wave components in salt fog ageing test
S. Yamashita[1], Z. Yong[1], N. Anami[1], M. Otsubo[1], C. Honda[1], O. Takenouchi[2], and Y. Hashimoto[3]
[1]Miyazaki University, Japan
[2]Civil Aviation College, Japan
[3]Kyushu Electric Power Co. Inc., Japan

4A-12 Image analysis of hydrophobicity and dielectric property of polymer insulating material
T. Tokoro, Y. Omoto, Y. Katayama, and M. Kosaki
Gifu National College of Technology, Japan

4A-13 Water droplet behavior and discharge activity on silicone rubber surface energized by AC voltage (Part II)
Y. Mizuno[1], N. Kura[1], A. Gonzalez[2], G. Okudaira[2], K. Naito[2], K. Kondo[3], S. Ito[3], and Y. Koshino[3]

[1]Nagoya Institute of Technology, Japan
[2]Meijo University, Japan
[3]NGK Insulators, Ltd., Japan

4A-14 Silicone rubber subjected to combined effects of temperature and humidity
A. Sylvestre[1], P. Rain[1], and S. Rowe[2]
[1]University of Grenoble, France
[2]Schneider Electric Industries S. A., France

4A-15 Distribution of salt contamination in the course of fog chamber tests of polymer insulators
E.P. Casale[1], W. Que[2], and S.A. Sebo[2]
[1]S & C Electric Company, USA
[2]Ohio State University, USA

4A-16 Effect of the shed design on aging performance of silicone rubber insulators
A.H. El-Hag, S Jayaram, and E.A. Cherney
University of Waterloo, Canada

4A-17 Voltage-current phase angle measurements during aging tests of polymer insulators
W. Que[1], E.P. Casale[2], and S.A. Sebo[1]
[1]Ohio State University, Elec. Eng., USA
[2]S & C Electric Company, USA

4A-18 Tracking and erosion resistance of RTV silicone rubber: effect of filler particle size and loading
R. Omranipour, L.H. Meyer, S.H. Jayaram, and E.A. Cherney
University of Waterloo, Canada

4A-19 Discussion of discharge mechanism and leakage current of outdoor polymeric insulating materials in salt-fog test
M. Hikita[1], M. Miyata[1], S. Kurihara[1], S. Ohtsuka[1], Y. Hashimoto[2], and S. Higashi[2]
[1]Kyushu Institute of Technology, Japan
[2]Kyushu Electric Power Company, Japan

4A-20 Accelerated aging of polymer insulators
P.B. McGrath[1], F.D. Crudele[2], and C.W. Burns[3]
[1]Clarkson University, USA
[2]Electric Power Research Institute, USA
[3]Niagara Mohawk, USA

4A-21 Effects of insulator profile on the critical condition of AC arc propagation on ice-covered insulators
M. Farzaneh, J. Zhang, and S.S. Aboutorabi
Université du Québec à Chicoutimi, Canada

4A-22 Loss and recovery of hydrophobicity of RTV silicone rubber coating
J. Zhidong and G. Zhicheng
Tsinghua University, China

1030–1230 4B Aging (Poster)

Chair: Brian R. Varlow, University of Manchester, UK
Organizer: R. Anthony Fouracre, University of Strathclyde, UK

4B-1 Application of polymer aging models to power cables
E.S. Cooper, J.C. Fothergill, and L.A. Dissado
University of Leicester, UK

4B-2 Comparison of new cables and aged cables out of the grid by the thermal step method
G. Platbrood[1], S. Agnel[2], and A. Toureille[2]
[1]Laborelec, Belgium
[2]Université Montpellier II, France

4B-3 Aging diagnosis of solid insulation for large oil-immersed power transformers
M. Dong[1], Y. Shang[1], W.B. Zhoa[1], Z. Yan[1], and Z. Zheng[2]
[1]Xi'an Jiaotong University, China
[2]University of Toronto, Canada

4B-4 Study on the aging of stator insulation in large generators based on dynamic mechanical analysis
Y. Hao[1], Z. Jia[2] , Z. Zeng[1], G. Wang[1], N. Gao[1], and H. Xie[1]
[1]Xi'an Jiaotong University, China
[2]Tsinghua University, China

4B-5 The impact of oil decay on the service reliability of aging power transformers
J. Sabau[1], I. Silberg[2], and P. Vaillancourt[3]
[1]InsOil Canada Ltd., Canada
[2]University Babes-Bolyai, Romania
[3]ATCO Electric, Canada

4B-6 Economic evaluation of degradation diagnosis for cables
T. Shimakage[1], K. Wu[1], T. Kato[1], T. Okamoto[2], and Y. Suzuoki[1]
[1]Nagoya University, Japan
[2]Central Research Institute of Electric Power Industry, Japan

4B-7 Dielectric response of unaged and service aged medium voltage XLPE cables
E. David[1], N. Amyot[2], D. Fournier[2], and D. Jean[2], and D Lalancette[2]
[1]École de Technologie Supérieure, Canada
[2]Institut de recherche d'Hydro-Québec, Canada

4B-8 Prediction of future performance of in service XLPE cables
R.S. Gorur[1], S. Dalal[1], and M.L. Dyer[2]
[1]Arizona State University, USA
[2]Salt River Project, USA

4B-9 TR-XLPE medium voltage cables subject to accelerated aging cycle under multiple stresses
E. Da Silva, J. Ramirez, J. Bermudez, M. Martinez, J.C. Rodriguez, G. Ronca, and J.L. Feijoo,

Simon Bolivar University, Venezuela

4B-10 Electronic states of excess electrons in polyethylene
D. Cubero, G. Marcelli, and N. Quirke
Imperial College of Science, Technology and Medicine, UK

4B-14 Dielectric response of cable accessories and its influence on cable diagnostics
N. Amyot[1], E. David[2], D. Fournier[1], D. Jean[1], and D. Lalancette[1]
[1]Institut de recherche d'Hydro-Québec, Canada
[2]École de techologie supérieure, Canada

4B-15 Dielectric spectroscopy of epoxy/glass composite materials
M.N. Ajour[1], L.A. Dissado[1], J.C. Fothergill[1], and P.N. Norman[2]
[1]University of Leicester, UK
[2]Alcatel Submarine Network, UK

1230-1400 Lunch Break

1400-1630 Session 5 (Poster)

1500-1630 Refreshments

1400–1630 5A Electrical Equipment (Poster)

Chair: Harry Orton, Orton Consulting Engineers Intl., Canada
Organizer: Shesha H. Jayaram, University of Waterloo, Canada

5A-1 Distributed PD measuring techniques (D-PDM) for installed power equipment diagnosis
V.R. Garcia-Colon
Instituto de Investigaciones Electricas, Mexico

5A-2 The study of propagation characteristics of partial discharge in transformer
Q. Shaozhen and S. Birlasekaran
Nanyang Technological University, Singapore

5A-3 Twisted pair specimens subjected to several waveform voltages in presence of partial discharges
F. Guastavino, G. Coletti, and E. Torello
University of Genova, Italy

5A-4 Experience with partial discharge, dissipation factor and recovery voltage measurements for the evaluation of the insulation systems of high voltage rotating machines
M. Farahani, H. Borsi, and E. Gockenbach
University of Hannover, Germany

5A-5 Locating partial discharges in a power generating system using neural networks and wavelets
K.N. Smith[1] and R.A. Perez[2]
[1]Progress Energy, USA

[2]University of South Florida, USA

5A-6 Partial discharge characteristics of long-term operated 550kV GCB epoxy spacer
S. Watanabe[1], N. Hayakawa[1], T. Kumai[2], and H. Okubo[1]
[1]Nagoya University, Japan
[2]Chubu Electric Power Co., Inc., Japan

5A-7 Partial discharge localization for efficient radio spectrum management
I.E. Portugues, P.J. Moore, and I.A. Glover
University of Bath, UK

5A-8 Artificial neural network modelling of partial discharge parameters for transformer oil diagnosis
J.S. Foo[1] and P.S. Ghosh[2]
[1]TNB Research Sdn. Bhd., Malaysia
[2]Universiti Tenaga Nasional, Malaysia

5A-9 On-line partial discharge diagnosis on large motors
D.W. Gross
Power Diagnostix Systems GmbH, Germany

5A-10 Interfacial space charge between ZnO varistor ceramics and coating materials
S. Li[1], J. Li[1], G. Chen[2], and A.E. Davies[2]
[1]Xi'an Jiaotong University, China
[2]University of Southampton, UK

5A-11 The analysis of the partial discharge pattern of the artificial defects at the interfaces of XPLE cable joint using laboratory model
J.S. Lee[1], J.Y. Koo[1], Y.S. Lim[1], J.T. Kim[2], and S.K. Lee[3]
[1]Hanyang University, Korea
[2]Daejin University, Korea
[3]LG Cable Ltd., Korea

5A-12 Development of all solid compact connection system for high voltage equipment
T. Takahashi, T. Takahashi, T. Takeda, and T. Okamoto
Central Research Institute of Electric Power Industry, Japan

5A-13 Laboratory studies of slot discharges on stator bars
L. Lamarre, D. Jean, and D.N. Nguyen
Institut de recherche d'Hydro Québec, Canada

5A-14 Assessing hydrogen direct cooling electrical generators through on-line partial discharge measurements
O. Reyes and E. Robles
Instituto de Investigaciones Eléctricas, Mexico

5A-15 The impact of humidity on PD inception voltage as a function of rise-time in random wound motors of different designs
M. Fenger and G.C. Stone
Iris Power Engineering Inc., Canada

5A-16 Very fast front transient voltages & dielectric withstand effects on transformer insulation
K. Raja, F. Devaux, S. Lelaidier, and A. Girodet
ALSTOM Transmission and Distribution, France

5A-17 Aging extent assessment of insulation based on velocity measurement of ultrasonic longitudinal wave propagated in stator insulation
Y. Hao[1], Z. Jia[2] , Z. Zeng[1], G. Wang[1], and H. Xie[1]
[1]Xi'an Jiaotong University, China
[2]Tsinghua University, China

5A-18 An automated recognition system of ultra-high-frequency PD in transformers
P. Yuan[1], G. Wang[1], Y. Hao[1], Y. Li[1], and D. Xu[2]
[1]Xi'an Jiaotong University, China
[2]Guodian NanJing Automation Co. Ltd., China

1400–1630 5B Breakdown (Poster)

Chair: Michel Frechette, Institut de recherche d'Hydro Québec, Canada
Organizer: Isidor Sauers, Oak Ridge National Laboratory, USA

5B-1 Weibull statistical analysis of area effect on the breakdown strength in polymer films
S. Ul-Haq and G.RG. Raju
University of Windsor, Canada

5B-2 Performance of a three electrode triggered high-energy spark switch
M. He, J. Li, and Z. Yao
Huazhong University of Science and Technology, China

5B-3 Dielectric breakdown of polyethylene-carbon black composites
T. Tomimura[1], S. Nakamura[1], A. Ohshita[1], and T. Okamoto[2]
[1]Mie University, Japan
[2]Toshiba Co., Japan

5B-4 Investigation of discharge phenomena in porous materials
B. Hoferer and A.J. Schwab
University of Karlsruhe, Germany

5B-5 Experimental studies on insulation diagnosis of gas-liquid two-phase flow system
P. Yan[1], L.X. Zao[2], Y.X. Xhou[3], and G.S. Sun[1]
[1]Chinese Academy of Science, China
[2]Xi'an University of Technology, China
[3]Tsinghua University, China

5B-6 Effect of the polarity-gap interaction on the tendency of the electrical discharge paths in air when the lightning impulse voltage and direct voltages are applied
J.A. Martínez and M. Castro
CIPEL, Cuba

5B-7 High voltage breakdown of some solid epoxies at room temperature and in liquid nitrogen

D.R. James, I. Sauers, M.O. Pace, and A.R. Ellis
Oak Ridge National Laboratory, USA

5B-8 Measurement of the time dependent impedance of pulsed planar surface discharges in an argon cover gas

D.J. Fulker[1], R.A. Fouracre[2], A.J. Finlayson[1], and S.J. MacGregor[2]
[1]QinetiQ Ltd., UK
[2]University of Strathclyde, UK

5B-9 Development of very short interval space charge measurement system on PEA method

M. Fukuma[1], M. Nagao[2], N. Hozumi[2], M. Kosaki[3], Y. Kohno[4], K. Fukunaga[5], and T. Maeno[5]
[1]Matsue National College of Technology, Japan
[2]Toyohashi University of Technology, Japan
[3]Gifu National College of Technology, Japan
[4]Five Lab. Ltd., Japan
[5]Communication Research Laboratory, Japan

5B-10 Multi-megavolt switching in water: considerations for the Z-R machine

J.M. Lehr[1], J.P. Corley[2], J.E. Elizondo[3], P. Corcoran[4], D.L. Johnson[4], J.M. Maenchen[1], M. Mazarakis[1], D.H. McDaniel[1], I.D. Smith[4], M. Kincy[1], D.L. Kitterman[1], P. Wakefield[1], and K. Struve[1]
[1]Sandia National Laboratory, USA
[2]Ktech Corporation, USA
[3]Electromagnetic Technologies Corporation, USA
[4]Titan Pulse Sciences, USA

5B-11 A new approach in modeling AC flashover voltage for polluted insulators

S. Jaafar, A.S. Ahmad, P.S. Ghosh, and S. Aljunid,
Universiti Tenaga Nasional, Malaysia

5B-12 Multi-branch modeling of an electric discharge on slightly conductive surfaces under DC voltage

D. Mahi[1], F. Benazzouz[2], and B. Zegnini[1]
[1]Amar Telidji University Laghouat, Algeria
[2]University center of Djelfa, Algeria

5B-13 Flashover mechanism of RTV coated insulators

J. Zhidong, G. Zhicheng, and G. Haifeng
Tsinghua University, China

5B-14 Breakdown and space charge distribution in polyimide films

Y. Muramoto[1], H. Goto[1], S. Mitsumoto[2], M. Fukuma[3], N. Hozumi[1], and M. Nagao[1]
[1]Toyohashi University of Technology, Japan
[2]Ube National College of Technology, Japan
[3]Matsue National College of Technology, Japan

5B-15 Dielectric property of the composites made with polyethylene, boron nitride and carbon black
T. Okamoto[1], M. Koyama[1], Y. Inoue[1], T. Tomimura[2] and S. Nakamura[2]
[1]Toshiba Co., Japan
[2]Mie University, Japan

1400–1630 5C Space Charge (Poster)

Chair: Yashimichi Ohki, Waseda University, Japan
Organizer: G.R. Govinda Raju, University of Windsor, Canada

5C-1 Electrical conduction in polyimide-FEP fluoropolymer films
R. Shaikh and G.R.G. Raju
University of Windsor, Canada

5C-2 The low frequency behaviour of styrene butylene rubber (SBR)
J.W. Mackersie, M.J. Given, S.J. MacGregor, and R.A. Fouracre
University of Strathclyde, UK

5C-3 High field time dependent charge injection in SiO_2
D. Holten, H. Trenz, S. Thul, and H. Kliem
Saarland University, Germany

5C-4 Photo-stimulated discharge of highly insulating polymers (PTFE and PETP)
F. Camacho González[1], A. Mellinger[1], R. Gerhard-Multhaupt[1], L. F. Santos[2], and R.M. Faria[2]
[1]University of Potsdam, Germany
[2]Universidade de São Paulo, Brazil

5C-5 Residual fields characterization with a virtual space charge model
J.L. Franceschi, A. Petre, L. Boudou, and D. Marty-Dessus
Paul Sabatier University, France

5C-6 Short-duration space charge observation in LDPE at the electric breakdown
K. Matsui[1], Y. Tanaka[1], T. Fukao, T. Takada[1], and T. Maeno[2]
[1]Musashi Institute of Technology, Japan
[2]Communications Research Laboratory, Japan

5C-7 Three-dimensional cartography of space charge in FLIMM
D. Marty-Dessus, L. Berquez, A. Petre, M. Mousseigne, and J. Franceschi
Paul Sabatier University, France

5C-8 Space charge measurements in epoxy resin under DC voltage
C. Guillermin[1], P. Rain[2], and A. Sylvestre[2], and S. Rowe[1]
[1]Schneider Electric, France
[2]LEMD-CNRS, France

5C-9 High field dissipation current waveform of polyethylene film obtained by new method
A. Tanaka[1], K. Tohyama[1], T. Tokoro[2], M. Kosaki[2], and M. Nagao[3]

[1]Numazu College of Technology, Japan
[2]Gifu National College of Technology, Japan
[3]Toyohashi University of Technology, Japan

5C-10 Space charge behavior of LDPE with blocking electrode

B. Zhang[1] and T. Mizutani[2]
[1]Sichuan University, China
[2]Nagoya University, Japan

5C-11 Space charge dynamics of low-density polyethylene

T. Mizutani[1], Y. Taniguchi[1], T. Hori[1], and M. Ishioka[2]
[1]Nagoya University, Japan
[2]Japan Polychem Co., Japan

5C-12 Temperature dependence of electroluminescence in polyethylene naphthalate

D. Mary[1], S. Carré[1], G. Teyssedre[1], C. Laurent[1], and T. Mori[2]
[1]Université Paul Sabatier, France
[2]Nagoya University, Japan

5C-13 Chemical group in crosslinking byproducts responsible for space charge trapping in polyethylene

N. Hirai[1], R. Minami[1], T. Tanaka[1], Y. Ohki[1], M. Okashita[2], and T. Maeno[3]
[1]Waseda University, Japan
[2]Showa Electric Wire and Cable, Japan
[3]Communications Research Laboratory, Japan

5C-14 Space charge formation in glass materials after electron-beam irradiation

H. Miyake, Y. Tanaka, T. Takada, R. Watanabe, and N. Tomita
Musashi Institute of Technology, Japan

5C-15 The effects of material properties and inclusions on the space charge profiles of LDPE and XLPE

Y. Sekii[1], T. Ohbayashi[1], T. Uchimura[1], K. Mochizuki[1], and T. Maeno[2]
[1]Chiba Institute of Technology, Japan
[2]Communication Research laboratory, Japan

5C-16 Concurrent space charge and current density measurements in additive-free LDPE

W.S. Lau, G. Chen, and A.E. Davies
University of Southampton, UK

5C-17 Development of a three dimensional space charge measurement system for dielectrics using PWP method

Y. Tian, G. Chen, and A.E. Davies
University of Southampton, UK

5C-18 Dielectric sample with two-layer charge distribution for space charge calibration purposes

J.T. Holboell[1], M. Henriksen[1], and C. Rasmussen[2]
[1]Technical University of Denmark, Denmark
[2]NKT Research, Denmark

5C-19 Determination of charge trapping ability in doped α-alumina
J. Liébault[1], D. Siesse-Moya[1], F. Moya[1], K. Zarbout[1], G. Damamme[2], and G. Moya[1]
[1]Faculté des Sciences et Techniques de Saint-Jérôme, France
[2]CEA Le Ripault, France

5C-20 Conduction and trapping mechanisms in monocrystalline titanium dioxide through the mirror method
T. Temga, C. Guerret-Piécourt, D. Juvé, and D. Tréheux
Ecole Centrale de Lyon, France

5C-21 Space charge accumulation process in PET film at high temperature under high electric stress
S. Ishizaki, K. Miyatake, Y. Tanaka, and T. Takada
Musashi Institute of Technology, Japan

5C-22 Electroluminescence of low density polyethylene under uniform AC electrical field
K.I. Wong, P.L. Lewin, and A.E. Davies
University of Southampton, UK

5C-23 Temperature dependence of space charge behavior in silicone
P. Rain[1], D.H. Nguyen[1], A. Sylvestre[1], and S. Rowe[2]
[1]LEMD-CNRS, France
[2]Schneider Electric Industries S.A., France

1800–1900 Social Hour

1900–2100 Banquet

Wednesday, October 23, 2002

0800–1000 Session 6, General II (Oral)

Chair: Ravi S. Gorur, Arizona State University, USA
Organizer: Jane M. Lehr, Sandia National Laboratory, USA

6-1 An investigation of the effect of cross-linking in polyethylene through space charge and luminescence measurements
G. Tardieu[1], G. Teyssedre[1], C. Laurent[1], G.C. Montanari[2], A. Campus[3], and U. Nilsson[3]
[1]Université Paul Sabatier, France
[2]University of Bologna, Italy
[3]Borealis, Sweden

6-2 Algorithm for separative measurement of surface leakage current of polymer insulating materials based on its current waveform distortion
H. Homma[1], T. Kuroyagi[1], T. Takahashi[1], S. Ohtsuka[2], and M. Hikita[2]
[1]Central Research Institute of Electric Power Institute, Japan
[2]Kyushu Institute of Technology, Japan

6-3 DEP based cell separation utilizing planar microelectrode array
Y. Li and K.V.I.S. Kaler
University of Calgary, Canada

6-4 The effect of voltage frequency on partial discharge activity
R. Bodega[1], A. Cavallini[2], P.H.F. Morshuis[1], and F.J Wester[1]
[1]Delft University of Technology, The Netherlands
[2]University of Bologna, Italy

6-5 Negative ion formation in CH_4-Ar mixtures with low SF_6
J. de Urquijo[1] and F.B. Yousif[2]
[1]Universidad Autonoma del Estado de Morelos, Mexico
[2]Universidad Nacional Autonoma de Mexico, Mexico

6-6 Electrification study in dielectrical material fluidized beds for different fluidizations regimes
S. Leon Escalante[1], G. Touchard[1], and G. Dominguez[2]
[1]Université de Poitiers, France
[2]Instituto Tecnologico de Celaya, Mexico

1000-1030 Break (Refreshments)

1030-1230 Session 7 (Poster)

1030–1230 7A Partial Discharge (Poster)

Chair: Nagu N. Srinivas, DTE Energy Technologies, Inc., USA
Organizer: Steven A. Boggs, University of Connecticut, USA

7A-1 Inferring PD identification through fuzzy tools
A. Cavallini[1], M. Conti[1], A. Contin[2], and G.C. Montanari [1]
[1]University of Bologna, Italy
[2]University of Trieste, Italy

7A-2 Searching for PD-based indexes able to infer the location of internal defects in insulation
A. Cavallini[1], M. Conti[1], G.C. Montanari[1], A. Contin[2], R. Candela[3], P. Romano[3], and R. Schifani[3]
[1]University of Bologna, Italy
[2]University of Trieste, Italy
[3]University of Palermo, Italy

7A-3 Partial discharge pattern analysis using statistical technique in XLPE cable under various soil conditions
M. Mansor[1], A.B. Abdul Ghani[2], P.S. Ghosh[1]
[1]Universiti Tenaga Nasional, Malaysia
[2]TNB Research Sdn. Bhd., Malaysia

7A-4 PD frequency characteristics for a void bounded with XLPE
C.S. Kim, T. Hirase, and T. Mizutani

Nagoya University, Japan

7A-5 A new approach to identify electrical PD signal patterns using frequency spectral analysis
Y.H. Md Thayoob[1], A.B. Abd. Ghani[2], and P.S. Ghosh[1]
[1]Universiti Tenaga Nasional, Malaysia
[2]TNB Research Sdn Bhd, Malaysia

7A-6 Response of a narrow band PD detector and analyzer to ageing experiments
S. Senthil Kumar, Y.P. Nerkar, M.N. Narayanachar, and R.S. Nema
India Institute of Science, India

7A-7 Pulse sequence studies on PD data
S. Senthil Kumar, M.N. Narayanachar, and R.S. Nema
India Institute of Science, India

7A-8 PD-source identification and characterization on the basis of pulse shape analysis
R. Patsch, F. Berton, and D. Benzerouk
University of Siegen, Germany

7A-9 Application of neural network with genetic algorithms to UHF PD pattern recognition in transformers
S. Ping[1], X. Dake[2], W. Guoli[1], and L. Yanming[1]
[1]Xi'an Jiaotong University, China
[2]Guodian NanJing Automation Co. Ltd., China

7A-10 DC partial discharge testing and analysis
J.B. Mathes, T.J. Whelan, and C.J. Uhlrich
Honeywell Federal Manufacturing and Technologies, USA

7A-11 Metallic particle effect on the gas PD in co-axial cylinder electrodes
D. Zheng, C. Zhang, C. Chen, J. Yang, and X. Chi
Harbin University of Science and Technology, China

7A-12 Extruded insulated cable deterioration mechanism and PD
N. Ahmed and N. Srinivas
DTE Energy Technologies, Inc., USA

7A-13 A novel on-line PD monitoring and diagnostic system for power transformers
D. Lin[1], L. Jiang[1], F.Q. Li[1], D.H. Zhu[1], K.X. Tan[1], C.C. Wang[2], X.H. Jin[2], T.C. Cheng[2], and C.Q. Wu[3]
[1]Tsinghua University, China
[2]University of Southern California, USA
[3]Northeastern Electric Power Corp., China

7A-14 Artificial neural network modeling of partial discharge severity in XLPE cables under various soil conditions
A.B. Abd. Ghani[1], P.S. Ghosh[2], N.A. Mohd. Ghazali[1], and S.A. Fuad[1]
[1]TNB Research Sdn. Bhd., Malaysia
[2]Universiti Tenaga Nasional, Malaysia

1030–1230 7B Gases/Vacuum (Poster)

Chair: Marshall Pace, University of Tennessee, USA
Organizer: Huseyin R. Hiziroglu, Kettering University, USA

7B-1 Surface charge accumulation on insulating plates in SF_6 and the effect to DC and AC breakdown voltage of electrode arrangements
A. Winter and J. Kindersberger
Technische Universitaet Muenchen, Germany

7B-2 Initial conditions of surface charge accumulation under impulse voltage
F. Wang[1], Y. Qiu[1], Q. Zhang[1], X.Q. Qiu[2], and E. Kuffel[3]
[1]Xi'an Jiaotong University, China
[2]Nortel Networks, Canada
[3]University of Manitoba, Canada

7B-3 A simple model to estimate the dielectric strength of simple gases
E. Sandre and A. Aslanides
Electricite de France, France

7B-4 Analysis of the influence of humidity on streamer and leader predischarges considering h/δ greater than 15 g/m^3
P.A. Calva, G.P. Cabrera, J. Mejia, A.R. Portillo, E. Perez, F.P. Espino, and J. Fonseca
National Polytechnic Institute, Mexico

7B-5 Removal of NOx and SO_2 in flue gas by corona discharge reactor with water film
L. Dong[1], S. Sheng[1], L. Liu[2], J. Yang[1], and X. Chi[1]
[1]Harbin University of Science and Technology, China
[2]Harbin Institute of Technology, China

7B-6 Time-resolved study on negative ion motion in SF_6 at high pressures
G. Hinojosa[1], J. de Urquijo[1], J.L. Hernández Avila[2], and E. Basurto[2]
[1]Universidad Nacional Autonoma de México, Mexico
[2]Universidad Autónoma Metropolitana, Mexico

7B-7 Measurements of discharges and their branching behavior in atmospheric air
S. Stangherlin, G. Salge, and F. Koenig
ABB Corporate Research, Switzerland

7B-8 Breakdown voltages in Ar+SF_6 subjected to impulse voltages
H.R. Hiziroglu[1], J. Griggs[1], and M.S. Dincer[2]
[1]Kettering University, USA
[2]Gazi University, Turkey

7B-9 Fabrication and breakdown experiments of permittivity graded solid spacer for GIS
M. Kurimoto[1], K. Kato[1], H. Adachi[2], S. Sakuma[2], and H. Okubo[1]
[1]Nagoya University, Japan
[2]Mitsubishi Electric Corporation, Japan

7B-10 Impulse partial discharge and breakdown characteristics under non-uniform electric field in N_2/SF_6 gas mixtures
Y. Yoshitake[1], N. Hayakawa[1], T. Ueda[2], and H. Okubo[1]
[1]Nagoya University, Japan
[2]Chubu Electric Power Co. Inc., Japan

7B-11 Physico-chemical modelling of negative corona in oxygen: the effect of boundaries
F. Pontiga[1], C. Soria[1], A. Castellanos[1], and J.D. Skalny[2]
[1]University of Seville, Spain
[2]Comenius University, Slovakia

7B-12 PD time sequential and light emission properties as pre-breakdown phenomena of $SF_6/N_2/CO_2$ gas mixture
S. Ohtsuka[1], M. Koumura[1], M. Cho[1], M. Nakamura[2], and M. Hikita[1]
[1]Kyusyu Institute of Technology, Japan
[2]Kyushu Electric Power Co., Inc., Japan

7B-13 A new Monte Carlo method to simulate electrical discharge in gases in nonuniform field
M. Becerra and F. Roman
Universidad Nacional de Colombia, Columbia

7B-14 Obtaining the electrical parameters of the predischarge in air by using digitized voltage waveforms
M. Becerra and F.Roman
Universidad Nacional de Colombia, Columbia

7B-15 Negative partial discharge in compressed air: sequential characteristics evolving over time
M.F. Fréchette and R.Y. Larocque
Institut de recherche d'Hydro-Québec, Canada

7B-16 Surface flashover of fiberglass reinforced plastic in vacuum at cryogenic temperature
I. Sauers, D.R. James, M.O. Pace, and A.R. Ellis
Oak Ridge National Laboratory, USA

7B-17 DC corona surface discharge along an insulating flat plate in air: experimental results
C. Louste, E. Moreau, and G. Touchard
University Poitiers, France

1300-1730 Playa del Carmen Substation Technical Tour

1300-2130 Xcaret Social Tour

————————Thursday, October 24, 2002————————

0800–1000 Session 8, General III (Oral)

Chair: Rainer Patsch, University of Siegen, Germany
Organizer: Jane M. Lehr, Sandia National Laboratory, USA

8-1 Comparison of electric field and charge density distributions using the Kerr electro-optic method with blade-plane and point-plane electrodes
A. Helgeson[1] and M. Zahn[2]
[1]ABB Switzerland Ltd., Switzerland
[2]Massachusetts Institute of Technology, USA

8-2 High field degradation in n-hexane impregnated XLPE
T. Suzuki and N. Shimizu
Meijo University, Japan

8-3 Physical modeling of composite materials utilizing 2D and 3D impedance networks
E. Martensson[1], U. Gafvert[2], and B. Nettelblad[3]
[1]KTH Royal Institute of Technology, Sweden
[2]ABB Group Services Center AB, Sweden
[3]Ericsson Microwave Systems AB, Sweden

8-4 Typical cases of electric field and voltage distribution calculations along polymer insulators under various wet surface conditions
W. Que and S.A. Sebo
Ohio State University, USA

8-5 Extraction of PD data from UWB measurements on motor stator bars fed by an IGBT inverter
L. Angrisani[1], M. Di Lorenzo del Casale[2], M. D'Arco[1], and C. Petrarca[1]
[1]Universita' di Napoli, Italy
[2]Universita' di Salerno, Italy

8-6 Thermal characteristics of silicone rubber filled with ATH and silica under laser heating
L. Meyer, V. Grishko, S. Jayaram, E. Cherney, and W.W. Duley
University of Waterloo, Canada

1000-1030 Break (Refreshments)

1030–1230 Session 9 (Poster)

1030–1230 9A Measurements (Poster)

Chair: Gian Carlo Montanari, University of Bologna, Italy
Organizer: Reimund Gerhard-Multhaupt, University of Potsdam, Germany

9A-1 Portable space charge measurement system for space environment monitoring
T. Maeno and K. Fukunaga
Communications Research Laboratory, Japan

9A-2 Origins of photoluminescence bands induced by ultraviolet photons in polyethylene and polypropylene
T. Ito, D. Kaneko, and Y. Ohki
Waseda University, Japan

9A-3 Influence of moisture adsorption in high temperature dielectrics
S. Ul-Haq and G.RG. Raju
University of Windsor, Canada

9A-4 Detection of decomposition products in SF_6: a comparison of colorimetric detector tubes and ion mobility spectromtry
P. Pilzecker[1], J.I. Baumbach[2], and R. Kurte[2]
[1]Gesellschaft für analytische Sensorsysteme mbH, Germany
[2]Institut für Spektrochemie und Angewandte Spektroskopie, Germany

9A-5 Utilizing cable switching events to perform diagnostic on underground polymeric cable
T.O. Bialek[1], S. El-Hassany[2], and S. Grzybowski[2]
[1]San Diego Gas and Electric Co., USA
[2]Mississippi State University, USA

9A-6 A new test to characterize low voltage cables subjected to thermal and mechanical stresses
F. Guastavino[1], L. Centurioni[1], E. Torello[1], and A. Zaopo[2]
[1]University of Genova, Italy
[2]Pirelli Cavi e Sistemi, Italy

9A-9 Moisture and temperature effects on the dielectric spectrum of transformer pressboard
Y. Du[1], M. Zahn[2], N. Altamirano[3], M. Sarda[3], A.V. Mamishev[4], and B.C. Lesieutre[5]
[1]Underwriter's Laboratory, USA
[2]Massachusetts Institute of Technology, USA
[3]Fidelity Inc., USA
[4]University of Washington, USA
[5]Cornell University, USA

9A-10 Diagnostic testing and condition monitoring of transformer bushings
R. Venkatesh and S.R. Kannan
Crompton Greaves Ltd., India

9A-11 High-frequency characterization of semi-conducting screens of medium voltage XLPE cables
G. Mugala[1], R. Eriksson[1], and U. Gafvert[2]
[1]Royal Institute of Technology, Sweden
[2]ABB Corporate Research, Sweden

9A-12 Ultrasonic image formation of electrical breakdown region in epoxy resin blended with silica powder as filler material

E. Watanabe[1], T. Ohara[1], and M. Iino[2]
[1]Tokyo Metropolitan University, Japan
[2]Meidensha Co., Japan

9A-13 Polarization technique to assess the operating state of polymeric insulation

M. Abou-Dakka, S.S. Bamji, and A.T. Bulinski
National Research Council Canada, Canada

9A-15 The use of electric acoustic pulse technique for measuring the polarization reversal in ferroelectric ceramic samples

W.A. Moura[1], J.A. Eiras[2], M. Lente[2], J. Tomioka[3], C. Wisniewski[1], and J.A. Giacometti[4]
[1]Universidade Federal de São Paulo, Brazil
[2]Universidade Federal de São Carlos, Brazil
[3]Escola Técnica Federal de Mato Grosso, Burundi
[4]Universidade Estadual Paulista, Brazil

9A-16 Effect of temperature and humidity on space charge quantities

B. Alijagic-Jonuz, P.H.F. Morshuis, and J.J. Smit
Delft University of Technology, The Netherlands

9A-17 P-factor, a meaningful parameter for the evaluation of return voltage measurements

R. Patsch and O. Kouzmine
University of Siegen, Germany

9A-18 Application of optical fiber transmitting system in transformer's vibration measurement

J. Shengchang[1], X. Duke[2], and L. Yanming[1]
[1]Xi'an Jiaotong University, China
[2]Guodian Nanjing Automation, Co., Ltd., China

9A-19 Development of a digital acquisition system for partial discharges

K. Agarwal[1], G. Gerdin[1], P. Basappa[2], and V.K. Lakdawala[1]
[1]Old Dominion University, USA
[2]Norfolk State University, USA

9A-20 Assessment of performance of fringing electric field sensor arrays

A.V. Mamishev[1], A.R. Takahashi[2], Y. Du[3], B.C. Lesieutre[4], and M. Zahn[2]
[1]University of Washington, USA
[2]Massachusetts Institute of Technology, USA
[3]Underwriter's Laboratories Inc., USA
[4]Cornell University, USA

9A-21 Space charge behavior in electron irradiated polymers

V. Griseri[1], L. Lévy[2], D. Payan[1], T. Maeno[3], K. Fukunaga[3], and C. Laurent[4]
[1]Centre National d'Etude Spatiale, France
[2]ONERA-CERT, France
[3]Communication Research Laboratory, Japan
[4]Universite Paul Sabatier, France

1030–1230 9B Treeing (Poster)

Chair: Klaus Froehlich, Swiss Federal Institute of Technology, Switzerland
Organizer: Noriyuki Shimizu, Meijo University, Japan

9B-1 Study on DC component caused by water treeing in XLPE cable
C. Zhang, S. Sheng, J. Yang, and X. Chi
Harbin University of Science and Technology, China

9B-2 Influence of voltage interruption on electroluminescence intensity in LDPE
N. Nagura[1], S. Iemura[2], T. Takahashi[3], and N. Shimizu[1]
[1]Meijo University, Japan
[2]Kansai Electric Power Co., Inc, Japan
[3]Fujikura Ltd., Japan

9B-3 A new model for propagation of electrical tree structures in polymeric insulation
H.-Z. Ding and B.R. Varlow
University of Manchester, UK

9B-4 Pit observation and partial discharge measurement before tree initiation
N. Hattori, Y. Ehara, H. Kishida, and T. Ito
Musashi Institute of Technology, Japan

9B-5 On the role of ions in the formations of water trees in polyethylene cable insulation
G. Teissedre, O.I. Visata, and J.C. Filippini
LEMD/CNRS, France

9B-6 Electrical tree propagation along barrier-interfaces in epoxy resin
R. Vogelsang[1], D.R. Brütsch[2], T. Farr[1], and K. Fröhlich[1]
[1]Swiss Federal Institute of Technology, Switzerland
[2]Von Roll Isola AG Breitenbach, Switzerland

9B-7 Effect of moisture on treeing phenomenon in epoxy resin with filler under ac voltage
M. Nagao, K. Oda, K. Nishioka, Y. Muramoto, and N. Hozumi
Toyohashi University of Technology, Japan

9B-8 The influence of survival mechanical stress and voltage frequency on electrical tree in XLPE
X. Zheng[1], G. Chen[2], A.E. Davies[2], S.J. Sutton[3], and S.G. Swingler[3]
[1]Xi'an Jiaotong University, China
[2]University of Southampton, UK
[3]National Grid, UK

9B-9 Water treeing in polyethylene at low temperature region(-196C ~ -10C)
Y. Shirai[1], T. Kumazawa[2], and N. Shimizu[1]
[1]Meijo University, Japan
[2]Chubu Electric Power Co., Inc, Japan

9B-10 Properties of tree propagation from a simulated tree channel in LLDPE prepared by metallocene catalyst
K. Imai

Nagoya University, Japan

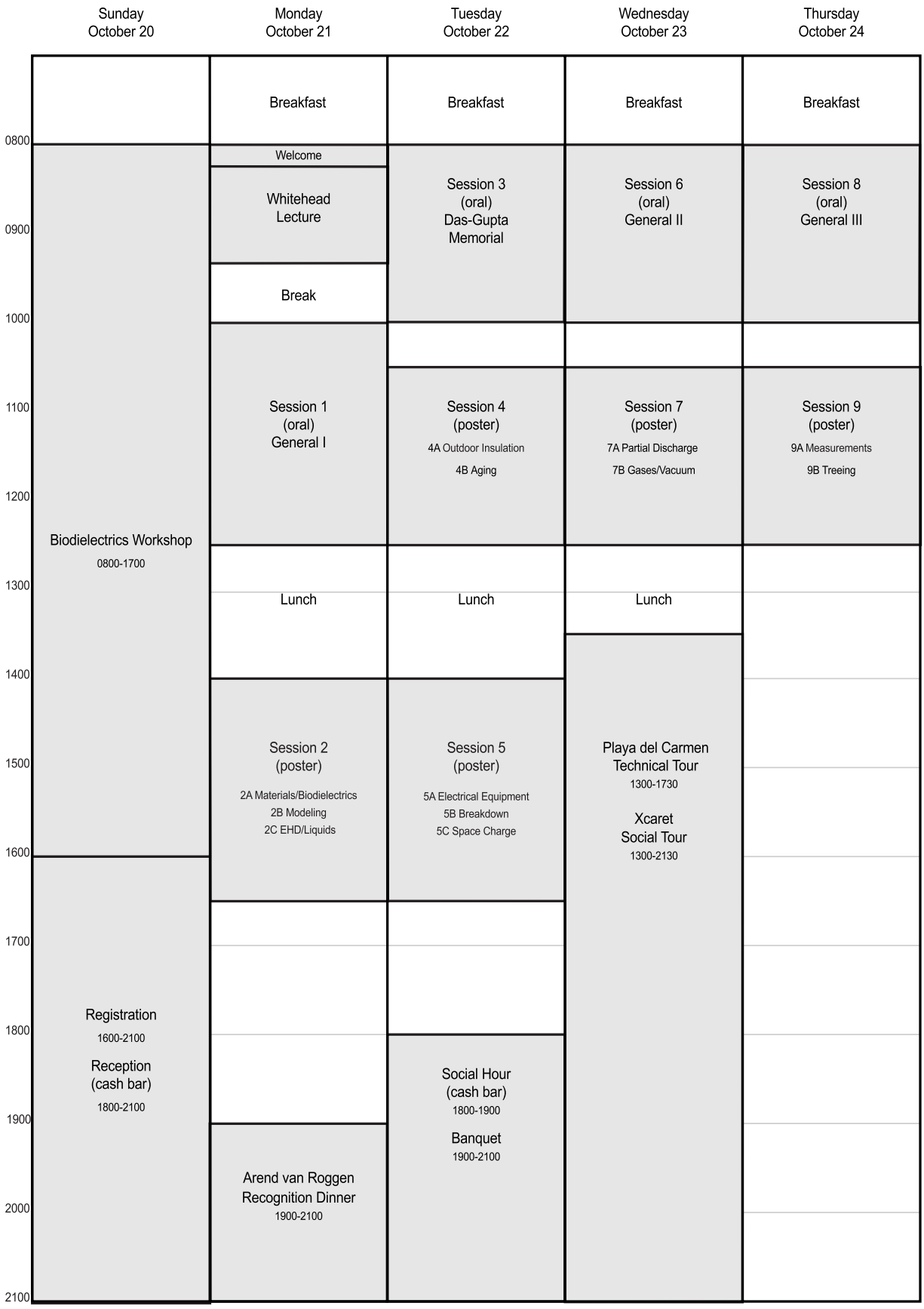
9B-11 Influence of residual charge on treeing degradation with single pulse analysis
T. Katori, D. Yamazaki, Y. Ehara, H. Kishida, and T. Ito
Musashi Institute of Technology, Japan

9B-12 An investigation into the effect of thermally stimulated discharges on the partial discharges obtained during electrical treeing
P. Basappa[1], V. Lakdawala[2], and V.K. Agarwal[3]
[1]Norfolk State University, USA
[2]Old Dominion University, USA
[3]College of SI, USA

9B-13 Influence of void surface state at swarming pulsive micro discharge
M. Yamamori, Y. Ehara, H. Kishida, and T. Ito
Musashi Institute of Technology, Japan

9B-14 Influence of swarming pulsive microdischarge on tree degradation
H. Kawakami, N. Kawakubo, Y. Ehara, H. Kishida. T. Ito
Musashi Institute of Technology, Japan

1230 Close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Breakfast
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Welcome
Whitehead
Lecture
Break
Session 3
(oral)
Das-Gupta
Memorial
Session 6
(oral)
General II
Session 8
(oral)
General III
Session 1
(oral)
General I
Session 4
(poster)
4A Outdoor Insulation
4B Aging
Session 7
(poster)
7A Partial Discharge
7B Gases/Vacuum
Session 9
(poster)
9A Measurements
9B Treeing
Biodielectrics Workshop
0800-1700
Lunch
Lunch
Lunch
Session 2
(poster)
2A Materials/Biodielectrics
2B Modeling
2C EHD/Liquids
Session 5
(poster)
5A Electrical Equipment
5B Breakdown
5C Space Charge
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Xcaret
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